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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/153,133	09/15/1998	D. DUKE LEE	04712/038002	5068

21559 7590 03/18/2010

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EXAMINER	
SOROUSH, LAYLA	
ART UNIT	PAPER NUMBER
1627	

NOTIFICATION DATE	DELIVERY MODE
03/18/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentadministrator@clarkelbing.com

Office Action Summary	Application No.	Applicant(s)	
	09/153,133	LEE ET AL.	
	Examiner	Art Unit	
	LAYLA SOROUSH	1627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45,46,58,59,73 and 75-77* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *45,46,58,59,73 and 75-77* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The response filed December 22, 2009 presents remarks and arguments submitted to the office action mailed September 23, 2009 is acknowledged.

Applicant's arguments over the 35 U.S.C. 103(a) rejection of claims 45, 46, 58-59, 73 and 75-77 over Reyveld (US Patent 4,016,252), in view of Gerhard et al. (US Patent 5,085,861), and Constantz et al (US Patent 5,782,971) is persuasive in view of amendments made to the claims. Therefore, the rejection of record is withdrawn.

The ODP rejection of record will be withdrawn upon filing of a Terminal Disclaimer.

The following rejections are made in view of amendments made to the claims:

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 45-46, 58-59, 73, and 75-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Constanz et al. (US Patent 5,782,971) in view of Gerhard (US Patent 5,085,861) , Dunn et al. (US Patent 5,324519), and Bogdansky et al.(US 5284655 A)

Constanz et al. teach flowable calcium phosphate compositions that comprise amorphous calcium phosphate (ACP) and at least one additional calcium source as

suitable drug delivery vehicles (Col. 2, lines 40-59, Col. 6, line 62). Once the components are combined, a paste like composition is made which is capable of setting in vivo into a remodelable product which has a crystallinity that approximates the crystallinity of bone (Col. 2, lines 40-59, Col. 6, lines 62-64). In addition to the ACP, the cements further comprise one additional source of calcium including dicalcium phosphate and it's dehydrate (Col. 4, lines 12-19). Constanz further teaches a physiologically acceptable fluid, such as sterile water (Col. 5, lines 19-45). It is taught that the ACP has a molar ratio of calcium to phosphate ranging from 1.5 to 1.8, which at 1.5 meets the limitation of claim 2 (Col. 3, lines 5-20; Col. 5, lines 1-10, claims 1-5). Constanz teaches that in addition to the calcium source, the compositions may further comprise dicalcium phosphate and its dehydrate (DCPD; Col. 4, lines 53-58). The compositions are intended for use in natural bone, which indicates that it is intended for a mammal.

Constanz et al. does not teach the addition of an antigen or vaccine.

Gerhard discloses biocompatible calcium phosphate containing compositions adapted for use in the surgical repair of living bone and for the controlled-release delivery of pharmaceutical agents (Col. 4, lines 19-25). Gerhard discloses that the compositions can be in the form of an injectable or moldable paste and will solidify within 10 minutes after administration and the reaction continues to proceed at a slower rate for a period of several hours to several days (Col. 7, lines 30-46, 60-67; Col. 8, lines 1-20 and examples 2-3). It is further taught that the biologically active substances incorporated into the composite prior to or during the curing step will be released in vivo

over a period ranging from about two days to about 30 days and longer depending on the nature of the composite formulation (Col. 8, lines 7-20). Gerhard teaches that the drug are typically implanted surgically at a site in the body where high drug concentrations are desired including into soft tissue for sustained drug release (Col. 7, lines 38-41 and 45-48). Gerhard teaches in Col. 13, lines 45-49 the surgical cement can be employed in the treatment of bone tumors.

Dunn et al. teach bone replacement materials in which pharmaceutically active compounds can be added to the compositions, which include agents such as a vaccine. Additionally, Bogdansky et al. teaches bone replacement material comprising antigenic and nucleic acids.

Accordingly, it would be obvious to a person of ordinary skill in the art at the time of the invention to combine the teachings of Constanz with the teachings of Gerhard because Constanz teaches calcium phosphate flowable compositions capable of setting in vivo in the treatment of compromised hard tissue, while the similar teachings of Gerhard are also drawn to calcium phosphate compositions adapted for use in the surgical repair of living bone and the delivery of pharmaceutically active ingredients for the treatment of living bone such as in bone tumors. It would be further obvious to include the teachings of Dunn and Bogdansky et al. which also teaches bone replacemtn and includes pharmaceutically active compounds such as vaccines and antigens. One would be motivated to combine the above prior art references in an effort

to formulate a composition that is a paste that is deliverable to hard tissue which can release active agents.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 45, 46, 58-59, 73 and 75-77 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 56 and 57 of U.S. Patent No. US 6541037 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the invention of the prior art is A vehicle for delivering a biologically active agent comprising: a calcium phosphate source consisting essentially of an amorphous calcium phosphate (ACP) and an acidic calcium phosphate; an aqueous solution in an amount to provide a paste of formable or injectable consistency with the calcium phosphate source, the paste being capable of hardening in association with an endothermic reaction; and a biologically active agent

contained in or on the paste whereas the claims herein are a delivery composition comprising: a) calcium phosphate comprising an amorphous calcium phosphate (ACP) or a poorly crystalline apatitic (PCA) calcium phosphate; and b) an antigen or vaccine wherein said calcium phosphate comprises greater than or equal to 40 wt% of said composition, and wherein said composition is formulated as an injectable paste that hardens in an endothermic reaction.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a vaccine or antigen into the composition. The motivation comes from the teaching that a biologically active agent is delivered using the ACP vehicle. Hence a skilled artisan would have reasonable expectation of success to incorporate the biologically active agents, vaccine or antigens.

Response to Arguments

Applicants argues that Gerhart describes a bone cement that is cured in an exothermic reaction as opposed to the present claims which harden in an endothermic reaction. Applicants provide a Declaration to explain the difference between Gerhart and the present invention. Applicants and the Tofighi Declaration focus on the Gerhart composition which cures in a mildly exothermic reaction. Applicants argue that the endothermic reaction of the present invention was an unexpected property of the calcium phosphate.

The arguments by Applicant and the Tofighi Declaration are herein acknowledged. However, it should be noted that Gerhart was not the primary reference and was not used for the teaching of the paste hardening in an endothermic reaction. Further, the claims are drawn to a composition and the process of the paste hardening in an endothermic reaction is a property of the composition. Gerhart was used for the teaching of delivering a pharmaceutical agent in a calcium phosphate composition. Therefore, the rejections are deemed proper.

The arguments are not persuasive and the rejection is made **FINAL**.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Layla Soroush whose telephone number is (571)272-5008. The examiner can normally be reached on Monday through Friday from 8:30

a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreenivasan Padmanabhan, can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/SREENI PADMANABHAN/

Supervisory Patent Examiner, Art Unit 1627